CLAIMS

1. An apparatus for processing a wafer, comprising:

a flow chamber having a first gas inlet for allowing a first gas to flow in the flow chamber;

a wafer inlet at which the wafer enters the flow chamber, the wafer inlet being coupled to a wafer storage device;

a wafer outlet at which the wafer exits the flow chamber, the wafer outlet being adapted to be coupled to a wafer processing apparatus;

a robotic apparatus in the flow chamber for moving the wafer from the wafer inlet to the wafer outlet; and

a second gas inlet for allowing a second gas to enter the flow chamber such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

2. The apparatus of claim 1, wherein the first gas comprises clean dry air.

3. The apparatus of claim 1, wherein the second gas comprises at least one gas selected from the group consisting of an inert gas, a stable gas, nitrogen, argon, helium and clean dry air.

4. The apparatus of claim 1, wherein the wafer storage device is a front opening unified pod (FOUP).

5. The apparatus of claim 1, wherein the apparatus is an equipment front-end module (EFEM).

6. The apparatus of claim 1, wherein the first gas has a substantially laminar flow in the flow chamber.

7. The apparatus of claim 1, further comprising a third gas inlet for allowing a third gas to enter the flow chamber.

8. The apparatus of claim 1, wherein the robotic element is a wafer handler.

9. A method for processing a wafer, comprising:

providing a flow chamber having a first gas inlet for allowing a first gas to flow in the flow chamber;

providing a wafer inlet at which the wafer enters the flow chamber, the wafer inlet being coupled to a wafer storage device;

providing a wafer outlet at which the wafer exits the flow chamber, the wafer outlet being adapted to be coupled to a wafer processing apparatus;

providing a robotic apparatus in the flow chamber for moving the wafer from the wafer inlet to the wafer outlet; and

allowing a second gas to enter the flow chamber such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

10. The method of claim 9, wherein the first gas comprises clean dry air.

11. The method of claim 9, wherein the second gas comprises at least one gas selected from the group consisting of an inert gas, a stable gas, nitrogen, argon, helium and clean dry air.

12. The method of claim 9, wherein the wafer storage device is a front opening unified pod

(FOUP).

13. The method of claim 9, wherein the apparatus is an equipment front-end module (EFEM).

14. The method of claim 9, wherein the first gas has a substantially laminar flow in the flow chamber.

15. The method of claim 9, further comprising allowing a third gas to enter the flow chamber.

16. The method of claim 9, wherein the robotic element is a wafer handler.

17. An apparatus for manufacturing a semiconductor device, comprising:

a wafer storage device for storing a semiconductor wafer on which the device is manufactured;

a wafer processing apparatus for performing a manufacturing process on the wafer; and

a wafer transfer apparatus for transferring the wafer between the wafer storage device and the wafer processing apparatus, the wafer transfer apparatus comprising:

a flow chamber having a first gas inlet for allowing a first gas to flow in the flow chamber,

a wafer inlet at which the wafer enters the flow chamber, the wafer inlet being coupled to the wafer storage device,

a wafer outlet at which the wafer exits the flow chamber, the wafer outlet being adapted to be coupled to the wafer processing apparatus,

a robotic apparatus in the flow chamber for moving the wafer from the wafer inlet to the wafer outlet, and

a second gas inlet for allowing a second gas to enter the flow chamber such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

18. The apparatus of claim 17, wherein the first gas comprises clean dry air.

19. The apparatus of claim 17, wherein the second gas comprises at least one gas selected from the group consisting of an inert gas, a stable gas, nitrogen, argon, helium and clean dry air.

20. The apparatus of claim 17, wherein the wafer storage device is a front opening unified pod (FOUP).

21. The apparatus of claim 17, wherein the wafer transfer apparatus is an equipment front-end module (EFEM).

22. The apparatus of claim 17, wherein the first gas has a substantially laminar flow in the flow chamber.

23. The apparatus of claim 17, wherein the wafer transfer apparatus further comprises a third gas inlet for allowing a third gas to enter the flow chamber.

24. The apparatus of claim 17, wherein the robotic element is a wafer handler.

25. The apparatus of claim 17, wherein the wafer processing apparatus is a chemical vapor deposition apparatus.

26. The apparatus of claim 17, wherein the wafer processing apparatus is a furnace apparatus.

27. The apparatus of claim 17, wherein the wafer processing apparatus is a dry etch apparatus.

28. The apparatus of claim 17, wherein the wafer processing apparatus is a metrology apparatus.

29. A method for manufacturing a semiconductor device, comprising:

storing a semiconductor wafer on which the device is manufactured in a wafer storage device;

performing a manufacturing process on the wafer in a wafer processing apparatus; and

transferring the wafer between the wafer storage device and the wafer processing apparatus using a wafer transfer apparatus, said transferring comprising:

providing a flow chamber having a first gas inlet for allowing a first gas to flow in the flow chamber,

coupling a wafer inlet at which the wafer enters the flow chamber to the wafer storage device,

coupling a wafer outlet at which the wafer exits the flow chamber to the wafer processing apparatus,

moving the wafer from the wafer inlet to the wafer outlet using a robotic apparatus, and

allowing a second gas to enter the flow chamber through a second gas inlet such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

30. The method of claim 29, wherein the first gas comprises clean dry air.

31. The method of claim 29, wherein the second gas comprises at least one gas selected from the group consisting of an inert gas, a stable gas, nitrogen, argon, helium and clean dry air an inert gas.

32. The method of claim 29, wherein the wafer storage device is a front opening unified pod (FOUP).

33. The method of claim 29, wherein the wafer transfer apparatus is an equipment front-end module (EFEM).

34. The method of claim 29, wherein the first gas has a substantially laminar flow in the flow chamber.

35. The method of claim 29, further comprising allowing a third gas to enter the flow chamber.

36. The method of claim 29, wherein the robotic element is a wafer handler.

37. The method of claim 29, wherein the wafer processing apparatus is a chemical vapor deposition apparatus.

38. The method of claim 29, wherein the wafer processing apparatus is a furnace apparatus.

39. The method of claim 29, wherein the wafer processing apparatus is a dry etch apparatus.

40. The method of claim 29, wherein the wafer processing apparatus is a metrology apparatus.

41. An equipment front-end module (EFEM) for processing a wafer stored in a wafer storage device, the module comprising:

a first gas inlet for allowing a first gas to flow in a flow chamber of the EFEM; and

a second gas inlet for allowing a second gas to enter the flow chamber such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

42. The EFEM of claim 41, wherein the wafer storage device is a front opening unified pod (FOUP).

43. The EFEM of claim 42, further comprising a third gas inlet for allowing a third gas to enter the flow chamber, such that the first, second and third gases flow into the FOUP.

44. The EFEM of claim 41, further comprising a third gas inlet for allowing a third gas to enter the flow chamber, such that the first, second and third gases flow into the wafer storage device.

45. A method of processing a wafer stored in a wafer storage device, comprising:

allowing a first gas to flow in a flow chamber of an equipment front end module (EFEM); and

allowing a second gas to enter the flow chamber such that the second gas combines with the first gas and flows into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.

46. The method of claim 45, wherein the wafer storage device is a front opening unified pod (FOUP).

47. The method of claim 46, further comprising allowing a third gas to enter the flow

chamber, such that the first, second and third gases flow into the FOUP.

48. The method of claim 45, further comprising allowing a third gas to enter the flow chamber, such that the first, second and third gases flow into the wafer storage device, such that the amount of contaminants entering the wafer storage device is reduced.